

**【CLAIMS】****【Claim 1】**

An apparatus for measuring the numbers of particles comprising:  
5        a particle charging means for charging particles to a monopolarity;  
an inner guide duct into which clean air is introduced;  
an electrode to which a high voltage is applied, the electrode being installed in the inner  
guide duct in a lengthwise direction of the inner guide duct;  
a power supplying means for supplying power to the electrode;  
an outer guide duct positioned outside the inner guide duct and being longer than the  
10      inner guide duct, the particles charged by the particle charging means being introduced between  
the inner guide duct and the outer guide duct;  
a particle separating means having an upper end positioned at an inner lower side of the  
outer guide duct, the particle separating means separating the charged particles according to size;  
and  
15      a particle counting means connected to the particle separating means, the particle  
counting means counting the particles separated according to size by the particle separating  
means.

**【Claim 2】**

20      The apparatus as claimed in claim 1, wherein the particle separating means includes a  
plurality of particle separating ducts that are spaced apart from a lower end of the electrode, and  
the particle counting means includes a plurality of particle counters connected to the respective  
particle separating ducts.

**【Claim 3】**

25      The apparatus as claimed in claim 2, wherein the particle separating ducts are  
concentrically installed.

**【Claim 4】**

30      An apparatus for measuring the numbers of particles comprising:  
a particle charging means for charging particles;  
a plurality of particle separators, each of the particle separators comprising an inner  
guide duct into which clean air is introduced, an electrode installed in the inner guide duct in a  
lengthwise direction of the inner guide duct, and an outer guide duct positioned outside the inner  
35      guide duct, being longer than the inner guide duct and including a particle collecting portion

downstream of the outer guide duct, the particles charged by the particle charging means being introduced between the inner guide duct and the outer guide duct;

5 a power supplying means for supplying mutually different powers to the respective electrodes of the a plurality of the particle separators so that voltage differences are formed between the respective electrodes; and

a plurality of particle counting means measuring particles collected by the respective particle separators.

#### 【Claim 5】

10 The apparatus as claimed in claim 4, wherein the power supplying means includes a power source and a plurality of resistors.

#### 【Claim 6】

A method for measuring the numbers of particles comprising steps of:

15 charging particles to be measured to a monopolarity;  
introducing the charged particles and clean air into a guide duct;  
applying a voltage to an electrode installed in the guide duct;  
attaching the charged particles of a certain size or less to the electrode;  
separating the charged particles, which are not attached to the electrode, according to  
20 size; and  
measuring the numbers of the charged particles separated according to size.

#### 【Claim 7】

The method as claimed in claim 6, wherein the size of the charged particles attached to  
25 the electrode is controlled by changing the voltage applied to the electrode.

#### 【Claim 8】

A method for measuring the numbers of particles comprising:

30 preparing a plurality of particle separators, each of the particle separators including a guide duct and an electrode provided in the guide duct;  
charging particles to be measured to a monopolarity;  
introducing the charged particles and clean air into the guide ducts;  
applying mutually different voltages to the electrodes;  
measuring the numbers of the charged particles separated by the particle separators; and  
35 calculating a size distribution of the particles based on the measured results.

**【Claim 9】**

The method as claimed in claim 8, wherein in the step of applying the mutually different voltages, a voltage is not applied to one of the electrodes.